289

PREDICTIVE FACTORS FOR NEW ONSET OR PROGRESSION OF OSTEOARTHRITIS IN THE KNEE JOINT ONE YEAR AFTER KNEE TRAUMA

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Purpose: Knee trauma maybe is the strongest risk factor for knee osteoarthritis (OA) but the exact pathogenesis and etiology is still not fully understood.
With magnetic resonance imaging (MRI) it is possible to separately evaluate bone, cartilage, ligaments, meniscus and soft- tissue lesions, as well as to assess degenerative processes in the joint more closely than with an indirect radiographic projection of intra-articular damage.
Further, the extent to which traumatic knee abnormalities predict the development of OA within the first years after trauma has only been sparsely documented.
We performed a study to prospectively evaluate prognostic factors (baseline MRI lesions included) for new onset or progression of degenerative change on follow-up MRI one year after traumatic knee injury.
Methods: In 2003 we consecutively included patients aged 18-65 years consulting the general practitioner because of an acute knee trauma within the preceding 5 weeks. Patients were excluded in case of severe injury requiring immediate hospital referral, or if a fracture was demonstrated. These patients underwent initial knee MRI 3-6 weeks after acute trauma, and follow-up MRI after one year (1.0 Tesla whole-body MRI unit and a dedicated knee coil). Degenerative femorotibial change on both MRI examinations was graded using a MRI-adapted 0-4 Kellgren and Lawrence scale. We used univariable and multivariable logistic regression analysis to analyze the prognostic value of demographics, trauma mechanism, pain score, Lysholm functional knee score, and initial MRI findings on development of new degenerative change or progression of pre-existing OA (one degree increase on MRI-adapted K&L scale). Further we univariably assessed the association of progression and new onset of degenerative change with clinical outcome, as reflected by non-recovery (complete recovery or strong improvement versus some improvement, or unchanged or deteriorated symptoms), one year after the injury.
Results: We included 134 patients and of them 117 patients were available for follow-up one year later (mean age 41 years, 43% women). At baseline on MRI in the index knee, 21 patients showed an ACL rupture, 95 a meniscal tear (43 patients with degenerative tears excluded), and 67 bone marrow edema. Further, 84 patients showed no, 19 doubtful, and 5 mild, 6 moderate, and 3 severe features of OA. At follow-up the distribution of these OA features was 62, 34, 10, 6 and 5 patients, respectively. In the univariable analysis, age above 50 years, body mass index greater than 25 kg/m^2, and bone marrow edema were significant predictors of new or progressive degenerative change ($p<0.10$). The only significant prognostic variable in multivariable analysis was bone marrow edema on initial MRI (OR 5.29, p=0.005). Further, a significant association between new or progressive degenerative change and clinical outcome (non-recovery) was found (OR 4.7, p=0.003).
Conclusions: Presence of bone marrow edema on MRI for acute knee injury is strongly predictive for new onset or progression of degenerative change of the femorotibial joint on follow-up MRI one year after trauma, which on its turn is reflected in non-recovery of knee symptoms.

290

SELF-EFFICACY, PHYSICAL ACTIVITY AND HEALTH-RELATED QUALITY OF LIFE IN MIDDLE-AGED POST MENISCECTOMY PATIENTS: A COMPARISON TO AN AGE-MATCHED CONTROL-GROUP

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Purpose: Degenerative meniscal tears are common in middle-aged subjects and partial meniscectomy is a frequent surgical procedure. We have previously found considerable symptoms and functional limitations still 4 years after surgery in post meniscectomy patients, and that muscle strength in the index limb has not always been regained. In this patient group, who has an increased risk to develop knee osteoarthritis, regular exercise may be of particular importance as a measure of maintaining leg muscle strength and stability and to control body weight. A low perceived self efficacy of knee function could hypothetically imply risk of adopting a sedentary lifestyle, leading to negative health effects.
To study the consequences of meniscal injuries and meniscectomy in middle-aged men and women from a health perspective, we examined self efficacy of knee function and explored the possible effects of self efficacy on physical activity and health-related quality of life.
Methods: 99 patients (27 % women) with mean age 44.5 years, who underwent an arthroscopic meniscectomy 1-5 years earlier and 94 controls (34 % women), with mean age 45 years answered questionnaires which included the Knee Self Efficacy Scale (K-SES$_{ABC}$), the Physical Activity Scale (PAS) and the health scale MOS Short Form-36 (SF-36).
Results: The sum score K-SES$_{ABC}$ was lower in the patient group than in the control group ($p = 0.001$), and similarly SF-36 subscores physical function and pain was lower in patients than controls, ($p<0.001$) and ($p= 0.002$), respectively. Only 46 % of the patients reported that they had resumed their pre-injury physical activity level, but the median physical activity level did not differ between the groups.
In the patient group K-SES$_{ABC}$ was positively correlated to PAS ($r_s = 0.42$, $p<0.001$), and correlated strongly with five SF-36 subscales: Physical function ($r_s = 0.85$, $p<0.001$), Bodily Pain ($r_s = 0.72$, $p<0.001$), Vitality ($r_s = 0.60$, $p<0.001$), Role-Physical ($r_s = 0.59$, $p<0.001$), and General Health ($r_s = 0.56$, $p<0.001$), and moderately to three subscales: Social Functioning ($r_s = 0.46$, $p<0.001$), Role-Emotional ($r_s = 0.38$, $p<0.001$) and Mental Health ($r_s = 0.35$, $p<0.001$).
Female patients had lower K-SES$_{ABC}$-score than male patients ($p = 0.006$), and lower scores in four SF-36 subscales (physical function, bodily pain, vitality and mental health) ($p< 0.04$), but reported their current physical activity on the same level as male patients ($p=0.110$).
Conclusions: We found lower self efficacy of knee function and worse self-rated health in the dimensions physical function and pain in post meniscectomy patients compared to controls. A strong relationship between self-efficacy and health-related quality of life, and a moderate association between self efficacy and physical activity were found in the patient group. Female patients had lower self efficacy and worse health-ratings than male patients, which may indicate that meniscal injury and meniscectomy have worse consequences in women than in men.
Our results suggest that meniscectomy subsequent to a degenerative meniscal tear may lead to decreased self-efficacy of knee function, which in turn may lead to decreased physical activity level and worse health-related quality of life. We propose that patients should be followed up by a physical therapist after meniscectomy, and if needed be offered supervised functional training in order to enhance self efficacy and restore muscle function, as this could

help them to resume physical activity and to maintain a good health.

291

BONE MINERAL DENSITY IN POSTMENOPAUSAL WOMEN WITH SPONTANEOUS OSTEONECROSIS OF THE KNEE

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Purpose: Recent reports have proposed that spontaneous osteonecrosis of the knee (SONK) results from a subchondral insufficiency fracture. The aim of the study was to assess whether the onset of SONK in postmenopausal women was related to low bone mineral density (BMD).
Methods: Twenty five consecutive postmenopausal women with SONK in the medial femoral condyle were treated at our institution during 4 year period between 2005 April to 2009 March. All patients underwent knee radiograph, knee magnetic resonance imaging (MRI) and dual energy x-ray absorptiometry at the lumbar spine, proximal femur and knee condyles. The patients with SONK showed typical clinical features including sudden onset and severe knee pain at the medial femoral condyle. MRI diagnosis of SONK was based on the presence of a discrete low intensity area in the femoral condyle on a T1-weighted image. None patients with SONK had a history of trauma. Patients with SONK which elapsed more than 12 weeks from onset to all examination were excluded. Fifty patients with varus knee osteoarthritis (OA) were also examined as a control. Body mass index was calculated as an index of obesity. The femorotibial angle was defined as the lateral angle between the femoral and tibial shaft axes. Clinical examinations of the knee were documented by use of the American Knee Society (AKS) Knee Score and Function Score. Differences BMD values at various points and other data between the groups were assessed.
Results: The mean age, body mass index and femorotibial angle in patients with varus knee OA were 69.5±7.3 years, 23.8±3.3 kg/m^2 and 179.1±3.0°, respectively. The mean age, body mass index and femorotibial angle in the patients with SONK were 72.5±6.4 years, 24.7±3.6 kg/m^2 and 179.7±2.1°, respectively. There were no significant differences in the mean age, body mass index and femorotibial angle in the different groups. The mean AKS Knee Score and Function Score in patients with varus knee OA were 71.5±17.3 and 75.0±23.6 points, respectively. The mean AKS Knee Score and Function Score in patients with SONK were 52.2±13.2 and 45.4±15.4 points, respectively. There were significant differences in the mean AKS Knee Score and Function Score in the different groups ($p<0.001$, $p<0.001$, respectively). The mean BMD at the lumbar spine, proximal femur in patients with varus knee OA were 0.844±0.141 and 0.610±0.096 g/cm^2, respectively. The mean BMD at the lumbar spine, proximal femur in patients with SONK were 0.785±0.140 and 0.533±0.063 g/cm^2, respectively. There was no significant difference in the mean BMD at the lumbar spine in the different groups ($p=0.121$), but was significant difference in the mean BMD at the proximal femur in the different groups ($p=0.001$). The mean BMD at the medial and lateral condyle of femur and the medial and lateral condyle of tibia in patients with varus knee OA were 1.028±0.210, 0.700±0.143, 0.819±0.192 and 0.649±0.141 g/cm^2, respectively. The mean BMD at the medial and lateral condyle of femur and the medial and lateral condyle of tibia in patients with SONK were 1.012±0.180, 0.567±0.098, 0.748±0.160 and 0.519±0.111 g/cm^2, respectively. There were no significant differences in the mean BMD at the medial condyle of femur and medial condyle of tibia in the different groups ($p=0.673$, 0.101, respectively), but were significant differences in the mean BMD at the lateral condyle of femur and lateral condyle of tibia in the different groups ($p<0.001$, $p<0.001$, respectively).
Conclusions: At the ipsilateral lower extremity, BMD of the patient with SONK was significantly lower than BMD of the patients with varus knee osteoarthritis. Low BMD may be associated with the onset of SONK in postmenopausal women.

292

USEFULNESS OF 7 DAY KNEE PAIN SCORES AMONG PEOPLE WITH MILD TO MODERATE KNEE OA PARTICIPATING IN CLINICAL TRIALS

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Purpose: To evaluate the one month changes in knee pain scores reported by people with mild to moderate knee osteoarthritis (OA) considering participation in a long term clinical trial evaluating dietary supplements
Methods: People volunteering for participation in the Long-term Evauation of Glucosamine Sulphate (LEGS) study, were screened for symptomatic (knee pain $\geq$4 out of 10 for most days of the past month) and radiographic eligibility (medial tibio-femoral joint space narrowing, but >2mm medial joint space width). If consenting and eligible, potential study participants were required to complete and return (mail or fax) a 7 day study Participant Diary during the pre-randomisation treatment run-in. Participants who proceeded to randomisation, were required to complete and return another study Participant Diary. In this Participant Diary, knee pain (left and right) experienced 'at its worst' (range 0-10) is recorded. For the designated study knee, changes in the mean knee pain (over 7days); Day 1 knee pain and highest knee pain score reported in one day over the 7 day period were calculated and compared between the two time periods (pre and post randomisation).
Results: At the end of 2008, 317 participants had been randomised for more than one month. The mean (sd) age of this cohort was 58 (8) years; 178 (56%) participants were female. Of the 317 randomised, 285 (90%) had returned the two Participant Diaries. The mean (sd) days between the pre and post randomisation diaries was 26 (12) days. Despite eligibility criteria requiring at least moderate pain, the mean (sd) knee pain reported in the study knee (over 7 days) was 3.5 (2.0), mean (sd) Day 1 knee pain was 3.5 (2.3) and mean (sd) highest knee pain score in any one day over the 7 day period was 4.8 (2.2). The correlation between pre and post randomisation diaries was high for all three calcaluations, 0.71, 0.61 and 0.65 for average, Day 1 and highest knee pain scores respectively. The mean (sd) decreases in pain scores between the pre and post randomisation diaries were insignificant for all three calculation methods; 0.13 (1.58), 0.12 (2.12) and 0.36 (1.94), respectively
Conclusions: Mild to moderate knee OA has a typically fluctuating symptomatology. The results indicate that there appears to be no added benefit of using an average of 7 days of knee pain recording in clinical trials, when compared with using a single score (Day 1). However, using the highest knee pain score attained over a 7 day period may provide a measurement less influenced by a floor effect and able to detect clinically meaningful symptomatic benefits for this group of patients.